MONTHLY WEATHER REVIEW.

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INTRODUCTION.

This REVIEW contains a general summary of the meteorological conditions which prevailed over the United States and Canada during September, 1884, based upon the reports from the regular and volunteer observers of the Signal Service and from co-operating state weather services.

Descriptions of the storms which occurred over the north Atlantic ocean during the month, are also given, and their approximate paths shown on chart i.

September was unusually warm over a greater part of the country east of the Rocky mountains, while to the westward the month was remarkably cool.

There was a marked deficiency in the monthly precipitation in the states bordering on the Atlantic and eastern Gulf coasts and over the middle and southern slopes. In the lower portions of the Ohio and Missouri valleys, throughout the Mississippi valley, in southern Texas, and west of the Rocky mountains, the precipitation was excessive.

Severe drought prevailed in the states on the Atlantic and Gulf coasts during the month.

The approximate paths of the centres of sixteen atmospheric depressions occurring within the limits of the Signal Service stations and of thirteen occurring over the north Atlantic ocean are shown on chart i. One of the latter was a tropical hurricane; that described as number 8 apparently developed near the south Atlantic coast and pursued an abnormal course. The average number of depressions occurring within the limits of the Signal Service stations in September, during the last eleven years, is nine, or seven less than the number for September, 1884.

Extensive auroral displays occurred on the evenings of the 13th and 17th; that on the latter date was observed at numerous intervening stations from Nova Scotia to the north Pacific coast and southward to southern Indiana and central Kansas.

An earthquake occurred on the afternoon of the 19th. The area affected by the shock extended from northeastern Michigan to the Ohio river and from western Pennsylvania to Indiana, and probably to eastern Iowa, a few reports having been received from that state, although none were received from Illinois.

Destructive tornadoes occurred in Iowa, Dakota, Minnesota, and Wisconsin on the 9th; and in Pennsylvania on the 28th.

In the preparation of this REVIEW the following data, received up to October 20th, 1884, have been used, viz.: the regular tri-daily weather-charts, containing data of simultaneous observations taken at one hundred and twenty-nine Signal Service stations and seventeen Canadian stations, as telegraphed to this office; one hundred and sixty-seven monthly journals; one hundred and sixty-one monthly means from the former, and seventeen monthly means from the latter; two hundred and fifty-nine monthly registers from voluntary observers; forty-seven monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports, through the co-operation of the "New York Herald Weather Service;" abstracts of ships' logs, furnished by the publishers of "The New York Maritime Register;" monthly weather reports from the local weather services of Alabama, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Missouri, Nebraska, Ohio, and Tennessee, and of the Central Pacific railway company; trustworthy newspaper extracts; and special reports.

ATMOSPHERIC PRESSURE.

[*Expressed in inches and hundredths.*]

The mean atmospheric pressure for September, 1884, determined from the tri-daily telegraphic reports of the Signal Service, is exhibited by the isobarometric lines on chart ii. This chart shows an area of barometric maxima, inclosed by the isobar of 30.1, over the middle and south Atlantic states, the greatest mean pressure, 30.14, being reported from Charlotte, and Kitty Hawk, North Carolina. The mean pressure is least over an area extending from Arizona and New Mexico northeastward to British America; in this region, two areas, inclosed by the isobar of 29.85, are shown, one including portions of Arizona and New Mexico, and the other covering Manitoba and the northern portions of Dakota and Minnesota. Between these areas of barometric minima the pressure increases to 29.89 over southeastern Wyoming, southern Dakota, and western Nebraska. To the westward of this region the mean pressure increases gradually, being greatest on the north Pacific coast where the barometric means reach 30.0.

Compared with the mean pressure for the preceding month (August), an increase varying from .01 to .06 is shown at stations west of the Rocky mountains; an increase also occurs in all districts east of the Mississippi river, with the exception of the upper Mississippi valley, the western portion of the upper lake region, and the Canadian maritime provinces. The increase in the districts east of the Mississippi is greatest from New Jersey and eastern Pennsylvania southwestward to northern Georgia, where the departures range from .05 to .09. From the Rocky mountains eastward to the Mississippi the barometric means are lower than for August, the departures being greatest from Manitoba southward to the central part of the Missouri valley, where they range from .05 to .08.

The mean pressure for September, 1884, compared with the normal (see chart iv.), shows a slight excess on the California coast, in the Ohio valley and Tennessee, east Gulf states, and on the Atlantic coast south of New England. In all other districts the mean pressure is below the normal, the departures being greatest in the upper Missouri valley and extreme northwest, where they range from .10 to .16.

BAROMETRIC RANGES.

The monthly barometric ranges were greatest in the lake region and least in the southern districts; the extreme monthly